

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application.

Claims 1, 4-6, and 9-23 are pending in the present application. Claim 1 has been amended, claims 2, 3, 7 and 8 have been cancelled, and claims 9-23 have been withdrawn from consideration.

Reconsideration of the application, as amended, is respectfully requested.

Claim Amendments

In the above amendments, claim 1 has been amended to incorporate the limitations of now-cancelled claim 8 and to include a further limitation that “the heater provides no fluid into the electroplating tank”. Support for this amendment can be found in FIG. 2 and the related description thereof. Applicant submits that no new matter has been added.

Claim Rejections - 35 U.S.C. § 102

Claims 1 and 3-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mathieu (U.S. Patent 6,042,712). Claims 1, 2 and 4-7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Reynolds (U.S. Patent 6,221,437). Claims 1, 4-6 and 8 stand rejected under 35 U.S.C. § 102(a) or (e)(2) as being anticipated by Oberlitner et al (U.S. 6,547,937 – hereinafter “Oberlitner”). These rejections are respectfully traversed.

As will be seen by the above amendments, claims 2, 3 and 7 have been cancelled. Accordingly, the rejections under 35 U.S.C. § 102 have been rendered moot.

A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983).

Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. *See e.g., In re Paulsen*, 30 F.3d 1475, 31 USPQ 2d 1671 (Fed. Cir. 1994); *In re Spada*, 911 F.2d 705, 15 USPQ 2d 1655 (Fed. Cir. 1990).

Claim 1, as amended, now recites:

An apparatus for metal electroplating, comprising:

a electroplating tank for containing an electrolyte at a first temperature;

a substrate holder for holding a semiconductor substrate; and

a heater for heating the portion of the electrolyte adjacent to the substrate holder to a second temperature higher than the first temperature,

wherein the heater is independently disposed in the electroplating tank and in a position opposite to the substrate holder, and the heater provides no fluid into the electroplating tank. (Emphasis added.)

In page 4 of the Office Action, the Examiner alleges that the paddle 132 of Oberlitner corresponds to the heater in claim 1 of the present application. However, as described in col. 18, lines 26-67 and shown in FIG. 29 of Oberlitner, the paddle 132 provides processing fluid into the processing station 28 or 30 via the set of the fluid delivery ports 150, and one or more sets of

fluid recovery ports 152 similarly recover the processing fluid. As disclosed in col. 19, lines 10-17, the fluid supplied by the paddle 132 could additionally include a temperature differential, wherein a cooled or a heated fluid is supplied to the workpiece.

The heating device of the present application for heating the portion of the electrolyte adjacent to the substrate holder is illustrated in a form of heat exchange pipe containing thermal oil capable of heat change or in a form of a heating element, such as an electrothermal coil. However, the heater of the present application directly heats the fluid adjacent thereto and provides no fluid, such as processing fluid, in the electroplating tank during electrochemical plating. Thus, Applicants believe that Oberlitenner fails to teach or disclose at least the above feature as emphasized in claim 1 of the present application.

Moreover, the heating device of the present application is independently disposed in the electroplating tank but not integrated with the electroplating tank or integrated with the substrate holder, as that disclosed in Mathieu and Reynolds, respectively.

Thus, claim 1 is in condition for allowance. Insofar as claims 4-6 depend from claim 1, these claims are also believed to be in condition for allowance for at least the same reasons set forth above regarding claim 1.

Accordingly, reconsideration and withdrawal of the 35 U.S.C. § 102 rejections are respectfully requested.

Conclusion

In view of the above amendments and remarks, Applicants believe the pending application is in condition for allowance, and an early Notice of Allowance is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned, at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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